

Sail Away Sail Away A Pre-Algebra Activity with the *fx-9750G PLUS*

Middle school students need to have experiences with the power of transformations in geometry in order to understand them. This activity was adapted from one in which students graphed by hand in *Everyday Mathematics*.

For this activity, divide your class into teams of four students. Have each student set the view window on his or her calculator by choosing Run from the main menu, then pressing SHIFT F3 (V-Window) and entering the following:

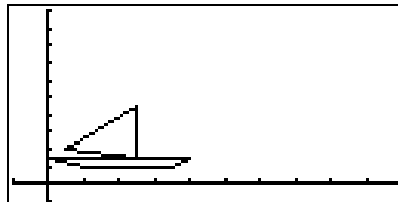
Xmin: -2
max: 20
scale: 2
Ymin: -2
max: 20
scale: 2

Give each member of the team one of the following four sets of coordinates and instructions to sketch on the calculator:

Student # 1

Press SHIFT F4, F6, F2 (LINE), F2 (F-Line) 8,3,5,3 to draw a line from (8,3) to (5,3). Exit 3 times to return to the run screen. Continue the procedure by drawing a line from (5,3) to (5,9) and so on to points (1,4), (5,3), (0,3), (2,2), (7,2), (8,3).

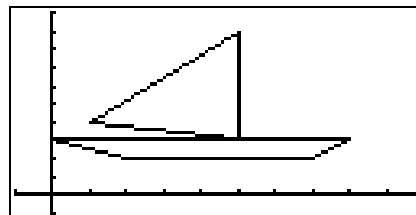
F-Line 8,3,5,3	
F-Line 5,3,5,9	Done
F-Line 5,9,1,4	Done
F-Line 1,4,5,3	Done
Line 0,0,0,0	



Student # 2

Press SHIFT F4, F6, F2 (LINE), F2 (F-Line) 16,6,10,6 to draw a line from (16,6) to (10,6). Exit 3 times to return to the run screen. Continue the procedure by then drawing a line from (10,6) to (10,18) and so on to points (2,8), (10,6), (0,6), (4,4), (14,4), (16,6).

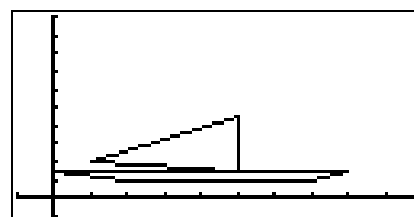
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F-Line 16,6,10,6 Done
F-Line 10,6,10,18 Done
F-Line 10,18,2,8 Done
F-Line 2,8,10,6 Done
Line F-Line
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Student # 3

Press SHIFT F4, F6, F2 (LINE), F2 (F-Line) 16,3,10,3 to draw a line from (16,3) to (10,3). Exit 3 times to return to the run screen. Continue the procedure by then drawing a line from (10,3) to (10,9) and so on to points (2,4), (10,3), (0,3), (4,2), (14,2), (16,3).

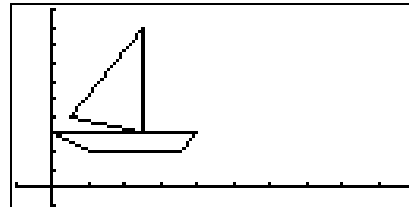
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F-Line 10,3,0,3 Done
F-Line 0,3,4,2 Done
F-Line 4,2,14,2 Done
F-Line 14,2,16,3 Done
Line F-Line
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Student # 4

Press SHIFT F4, F6, F2 (LINE), F2 (F-Line) 8,6,5,6 to draw a line from (8,6) to (5,6). Exit 3 times to return to the run screen. Continue the procedure by drawing a line from (5,6) to (5,18) and so on to points (1,8), (5,6), (0,6), (2,4), (7,4), (8,6).

F-Line 5,6,0,6	Done
F-Line 0,6,2,4	Done
F-Line 2,4,7,4	Done
F-Line 7,4,8,6	Done
Line F-Line	



When the students have completed the graphs, ask them to compare their sailboats and the coordinates they were given. Assuming the student # 1 had the original sailboat, have them determine as a group the rules for the transformations of the remaining boats.

To clear the screen, press SHIFT F4 (Sketch), F1 (CLS).

Give each group coordinate paper and challenge them to create their own design, draw the graph on the calculator and perform a set of transformations like the ones they just did.